OHS11155

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MDL INFORMATION SYSTEMS, INC.
1281 Murfreesboro Road, Suite 300
Nashville, TN 37217-2423
1-615-366-2000

EMERGENCY TELEPHONE NUMBER:
1-800-424-9300 (NORTH AMERICA)
1-703-527-3887 (INTERNATIONAL)

SUBSTANCE: HYDROCHLORIC ACID, CONCENTRATED (36-37%)

TRADE NAMES/SYNONYMS:
CHLOROHYDRIC ACID; HYDROCHLORIDE; MURIATIC ACID; SPIRITS OF SALT; HYDROCHLORIC ACID, CONCENTRATED; HYDROGEN CHLORIDE; HYDROCHLORIC ACID; UN 1789; OHS11155; RTECS MW4025000

CHEMICAL FAMILY: acids, inorganic

CREATION DATE: Apr 30 1985
REVISION DATE: Mar 18 2002

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: HYDROGEN CHLORIDE, ANHYDROUS
CAS NUMBER: 7647-01-0
EC NUMBER (EINECS): 231-595-7
PERCENTAGE: 37.0

COMPONENT: WATER
CAS NUMBER: 7732-18-5
EC NUMBER (EINECS): 231-791-2
PERCENTAGE: 63.0

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1

EMERGENCY OVERVIEW:
COLOR: colorless or yellow
PHYSICAL FORM: fuming liquid
ODOR: pungent odor
MAJOR HEALTH HAZARDS: respiratory tract burns, skin burns, eye burns, mucous

membrane burns
PHYSICAL HAZARDS: May react on contact with water. Releases toxic, corrosive, flammable or explosive gases.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation (possibly severe), headache, lung congestion, lung damage
LONG TERM EXPOSURE: digestive disorders
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe), frostbite
LONG TERM EXPOSURE: same as effects reported in short term exposure
EYE CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe), frostbite, blindness
LONG TERM EXPOSURE: same as effects reported in short term exposure
INGESTION:
SHORT TERM EXPOSURE: burns, nausea, vomiting, diarrhea
LONG TERM EXPOSURE: same as effects reported in short term exposure

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks.

FLASH POINT: No data available.

SECTION 6 ACCIDENTAL RELEASE MEASURES

AIR RELEASE:
Reduce vapors with water spray. Stay upwind and keep out of low areas. Collect runoff for disposal as potential hazardous waste. Reduce vapors with water spray. Stay upwind and keep out of low areas. Collect runoff for disposal as potential hazardous waste.

SOIL RELEASE:
Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

WATER RELEASE:
Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

OCCUPATIONAL RELEASE:
Do not touch spilled material. Stop leak if possible without personal risk. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Small dry spills: Move containers away from spill to a safe area. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response

Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store in a cool, dry place. Store in a well-ventilated area. Keep separated from incompatible substances.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
HYDROGEN CHLORIDE, ANHYDROUS:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
5 ppm (7 mg/m3) OSHA ceiling
5 ppm ACGIH ceiling
5 ppm (7 mg/m3) NIOSH recommended ceiling
7.6 mg/m3 (5 ml/m3) DFG MAK (peak limitation category - I, with excursion factor of 1)
10 ppm (15 mg/m3) EC MAK STEL
5 ppm (8 mg/m3) EC MAK TWA
5 ppm (8 mg/m3) UK OES STEL (gas) (mist)
1 ppm (2 mg/m3) UK OES TWA (gas) (mist)

MEASUREMENT METHOD: Silica gel tube; Sodium bicarbonate/Sodium carbonate; Ion chromatography; NIOSH IV # 7903, Inorganic Acids

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
50 ppm
Any chemical cartridge respirator with cartridge(s) providing protection

against this substance.
Any air-purifying respirator with a full facepiece and a canister providing protection against this substance.
Any powered, air-purifying respirator with cartridge(s) providing protection against this substance.
Any supplied-air respirator.
Any self-contained breathing apparatus with a full facepiece.

Escape -
Any air-purifying respirator with a full facepiece and an acid gas canister.
Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless or yellow
PHYSICAL FORM: fuming liquid
ODOR: pungent odor
MOLECULAR WEIGHT: 36.46
MOLECULAR FORMULA: H-Cl
BOILING POINT: 385 F (196 C)
FREEZING POINT: Not available
VAPOR PRESSURE: Not available
VAPOR DENSITY (air=1): 1.3
SPECIFIC GRAVITY (water=1): 1.2
WATER SOLUBILITY: soluble
PH: 1.1 (0.1 N solution)
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: May react with evolution of heat on contact with water. Releases toxic, corrosive, flammable or explosive gases.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition. Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.

INCOMPATIBILITIES: cyanides, metals, amines, bases, metal carbide, oxidizing materials, acids, halo carbons, combustible materials, halogens, metal salts

HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
ACETIC ANHYDRIDE: Violent reaction.
ALCOHOLIC HYDROGEN CYANIDE: Explosive reaction.
ALUMINUM: Explosion.
ALUMINUM-TITANIUM ALLOYS: Ignites or incandesces when heated.
2-AMINOETHANOL: Violent reaction.
AMMONIUM HYDROXIDE: Violent reaction.
BASES: Violent reaction.
BRASS: Corrodes.
BRONZE: Corrodes.
CALCIUM CARBIDE: Reacts with incandescence.
CALCIUM HYPOCHLORITE: Ignition.
CESIUM ACETYLIDE: Ignites on contact.
CHLORINE + DINITROANILINES: Vigorous reaction with release of flammable hydrogen gas fumes.
CHLOROSULFONIC ACID: Violent reaction.
1,1-DIFLUOROETHYLENE: Extremely exothermic decomposition reaction.
DOWICIL 100: Decomposes.
ETHYLENE DIAMINE: Violent reaction.
ETHYLENE IMINE: Violent reaction.
FLUORINE: Ignites on contact.
HEXALITHIUM DISILICIDE: Incandescesent.
IRON: Corrodes with evolution of flammable hydrogen gas.
MAGNESIUM BORIDE: Produces a spontaneously flammable gas.
MERCURIC SULFATE: Violent reaction at 125 C.
METAL ACETYLIDES: Violent reaction.
METALS: Severe corrosion with evolution of flammable hydrogen gas.
OLEUM: Violent reaction.
OXIDIZERS (STRONG): Violent reaction.
OXYGEN + PLATINUM: Ignites on contact.
PERCHLORIC ACID: Violent reaction.
PLASTICS, RUBBER, COATINGS: Attacks.
POTASSIUM PERMANGANATE: Explosion hazard.
BETA-PROPIOLACTONE: Violent reaction.
PROPYLENE OXIDE: Violent reaction.
RUBIDIUM ACETYLIDE: Ignites on contact.
SILICA (GEL): Incompatible.
SODIUM: Vigorous or explosive reaction.
SULFURIC ACID: Explosive reaction with release of toxic hydrogen chloride gas.
TETRASELENIUM TETRANITRIDE: Explodes on contact.
VINYL ACETATE: Violent reaction.

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: acid halides

POLYMERIZATION: Will not polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

HYDROCHLORIC ACID, CONCENTRATED (36-37%):
IRRITATION DATA:
5 mg/30 second(s) rinsed eyes-rabbit mild
TOXICITY DATA:
2857 ug/kg oral-man LDLo; 420 ul/kg oral-woman LDLo; 1300 ppm/30 minute(s) inhalation-human LCLo; 3000 ppm/5 minute(s) inhalation-human LCLo; 81 mg/kg unreported-man LDLo; 3124 ppm/1 hour(s) inhalation-rat LC50; 1108 ppm/1 hour(s) inhalation-mouse LC50; 40142 ug/kg intraperitoneal-mouse LD50; 900 mg/kg oral-rabbit LD50; 4413 ppm/30 minute(s) inhalation-rabbit LCLo; 4413 ppm/30 minute(s) inhalation-guinea pig LCLo; 685 ug/m3/24 hour(s)-84 day(s) continuous inhalation-rat TCLo
ACUTE TOXICITY LEVEL:
Moderately Toxic: inhalation, ingestion
MUTAGENIC DATA:
DNA repair - Escherichia coli 25 ug/well; sex chromosone loss and non disjunction - Drosophila melanogaster inhalation 100 ppm 24 hour(s); sex chromosone loss and non disjunction - Drosophila melanogaster oral 100 ppm; cytogenetic analysis - grasshopper parenteral 20 mg; cytogenetic analysis - hamster lung 30 mmol/L; cytogenetic analysis - hamster ovary 8 mmol/L
REPRODUCTIVE EFFECTS DATA:
450 mg/m3 inhalation-rat TCLo/1 hour(s) 1 day(s) pre pregnancy continuous

HYDROGEN CHLORIDE, ANHYDROUS:
IRRITATION DATA:
5 mg/30 second(s) rinsed eyes-rabbit mild
TOXICITY DATA:
2857 ug/kg oral-man LDLo; 420 ul/kg oral-woman LDLo; 1300 ppm/30 minute(s) inhalation-human LCLo; 3000 ppm/5 minute(s) inhalation-human LCLo; 81 mg/kg unreported-man LDLo; 3124 ppm/1 hour(s) inhalation-rat LC50; 1108 ppm/1 hour(s) inhalation-mouse LC50; 40142 ug/kg intraperitoneal-mouse LD50; 900 mg/kg oral-rabbit LD50; 4413 ppm/30 minute(s) inhalation-rabbit LCLo; 4413 ppm/30 minute(s) inhalation-guinea pig LCLo; 685 ug/m3/24 hour(s)-84 day(s) continuous inhalation-rat TCLo
CARCINOGEN STATUS: IARC: Human Inadequate Evidence, Animal Inadequate Evidence, Group 3
LOCAL EFFECTS:
Corrosive: inhalation, skin, eye, ingestion
ACUTE TOXICITY LEVEL:
Moderately Toxic: inhalation, ingestion
MUTAGENIC DATA:

DNA repair - Escherichia coli 25 ug/well; sex chromosone loss and non disjunction - Drosophila melanogaster inhalation 100 ppm 24 hour(s); sex chromosone loss and non disjunction - Drosophila melanogaster oral 100 ppm; cytogenetic analysis - grasshopper parenteral 20 mg; cytogenetic analysis - hamster lung 30 mmol/L; cytogenetic analysis - hamster ovary 8 mmol/L

REPRODUCTIVE EFFECTS DATA:

450 mg/m3 inhalation-rat TCLo/1 hour(s) 1 day(s) pre pregnancy continuous

HEALTH EFFECTS:

INHALATION:

ACUTE EXPOSURE:

HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Inhalation of gas or fumes at levels of 5-35 ppm may cause irritation and burning of the throat, coughing and choking; 50-100 ppm may be barely tolerable for 1 hour. High levels may cause inflammation and occasionally ulceration of the nose, throat or larynx, bronchitis, pneumonia, palpitations and headache. Higher concentrations may cause necrosis of the tracheal and bronchial epithelium, nasoseptal perforation, atelectasis, emphysema, damage to pulmonary blood vessels and lesions of the liver and other organs. Death may be due to laryngeal spasm, bronchopneumonia or pulmonary edema. 1300-2000 ppm may be dangerous, even on brief exposures. An environmental exposure to hydrochloric acid has resulted in chronic neurobehavioral dysfunction. Reproductive effects have been reported in animals.

CHRONIC EXPOSURE:

HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Repeated or prolonged exposure may cause erosion and discoloration of exposed teeth, chronic bronchitis and gastritis.

SKIN CONTACT:

ACUTE EXPOSURE:

HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Contact may cause severe irritation, inflammation, ulceration, necrosis and chemical burns. Shock symptoms may develop including rapid pulse, sweating and collapse. Photosensitization reactions may occur in persons previously exposed. Contact with a compressed gas may cause frostbite.

CHRONIC EXPOSURE:

HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Repeated or prolonged contact with vapors or dilute solutions may cause dermatitis. Photosensitization may occur.

EYE CONTACT:

ACUTE EXPOSURE:

HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Contact may cause severe irritation, conjunctivitis, corneal necrosis and burns with impairment or permanent loss of vision. A drop of hydrochloric acid splashed in the eye and immediately washed out has produced a white coagulation of the corneal

and conjunctival epithelium. Animals exposed to vapor concentrations of 1350 ppm for one and a half hours showed clouding of the cornea and 300 ppm for 6 hours showed slight erosion of the corneal epithelium. Contact with a compressed gas may cause frostbite.

CHRONIC EXPOSURE:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Animals exposed to vapor at 100 ppm for 6 hours daily for 50 days showed only slight unrest and irritation of the eyes, but no ocular injury. Effects are dependent upon concentration and duration of exposure. Conjunctivitis or effects similar to those for acute exposure may occur.

INGESTION:
ACUTE EXPOSURE:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): Ingestion of the acid may cause burns of the mouth, throat, esophagus and stomach with consequent pain, uneasiness, nausea, salivation, vomiting, diarrhea, chills, shock and intense thirst. Nephritis, fever and perforation of the intestinal tract, and circulatory collapse may occur. Death may be due to esophageal or gastric necrosis.

CHRONIC EXPOSURE:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): No data available.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 21900 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas)

INVERTEBRATE TOXICITY: 560 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna)

ALGAL TOXICITY: 800 ug/L 1600 week(s) EC50 (Population Size Reduction) Green algae (Chlorella pyrenoidosa)

PHYTOTOXICITY: 1000 ug/L 4-48 week(s) (Residue) Water-hyacinth (Eichhornia crassipes)

FATE AND TRANSPORT:
BIOCONCENTRATION: 1000 M 24 week(s) BCF (Residue) Blue-green algae (Coccochloris sp) 1E-6.5 M

SECTION 13 DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002. Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
- PROPER SHIPPING NAME: Hydrochloric acid
- ID NUMBER: UN1789
- HAZARD CLASS OR DIVISION: 8
- PACKING GROUP: II

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR/RID:
- PROPER SHIPPING NAME: Hydrochloric acid
- UN NUMBER: UN1789
- ADR/RID CLASS: 8
- CLASSIFICATION CODE: C1
- PACKING GROUP: II

AIR TRANSPORT IATA/ICAO:
- PROPER SHIPPING NAME: Hydrochloric acid/Hydrochloric acid solution
- UN/ID NUMBER: UN1789
- IATA/ICAO CLASS: 8
- PACKING GROUP: II

MARITIME TRANSPORT IMDG:
- PROPER SHIPPING NAME: Hydrochloric acid
- UN NUMBER: UN1789
- IMDG CLASS: 8
- PACKING GROUP: II

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5000 LBS RQ (liquid)

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 500 LBS TPQ (gas)

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5000 LBS RQ (gas)

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: No
FIRE: No
REACTIVE: Yes
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): except non-aerosol forms

OSHA PROCESS SAFETY (29CFR1910.119):
HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5000 LBS TQ (gas)

STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:
EC CLASSIFICATION (ASSIGNED):
T Toxic
C Corrosive

EC Classification may be inconsistent with independently-researched data.

DANGER/HAZARD SYMBOL:
T Toxic

EC RISK AND SAFETY PHRASES:

R 23	Toxic by inhalation.
R 35	Causes severe burns.
S 1/2	Keep locked-up and out of reach of children.
S 9	Keep container in a well-ventilated place.
S 26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S 45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

CONCENTRATION LIMITS:

C>=5%	T; C	R 23-35
1%<=C<5%	C	R 20-35
0.5%<=C<1%	C	R 20-34
0.2%<=C<0.5%	C	R 34

0.02%<=C<0.2% Xi R 36/37/38

GERMAN REGULATIONS:
WATER HAZARD CLASS (WGK):
STATE OF CLASSIFICATION: VwVwS
CLASSIFICATION UNDER HAZARD TO WATER: 1

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

SECTION 16 OTHER INFORMATION

MSDS SUMMARY OF CHANGES
SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
SECTION 3 HAZARDS IDENTIFICATION